# HUMAN RESOURCES OF THE STATE SUPERVISION SERVICE FOR PUBLIC HEALTH FROM REPUBLIC OF MOLDOVA

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***Rezumat***

***Resursele umane ale Serviciului de supraveghere de stat a sănătăţii publice din Republica Moldova***

*În articol sunt expuse rezultatele evaluării resurselor umane ale Serviciului de supraveghere de stat a sănătăţii publice (SSSSP) din Republica Moldova, în contextul reorganizării acestuia începând cu anul 2009. Rezultatele au demonstrat că evoluţia resurselor umane din acest sector în ultimul deceniu a avut un caracter nefavorabil, caracterizându-se prin scăderea continuă a densităţii medicilor, distribuire geografică neuniformă, vârsta medie avansată a medicilor, predominarea specialiştilor de vârstă pre- şi postpensionare, cota mare a medicilor fără instruire profesională continuă, orientarea medicilor tineri licenţiaţi preponderent spre Chişinău sau spre alte domenii de activitate etc. Cele expuse sunt expresia unei crize profunde a SSSSP la capitolul resurse umane, potenţialul uman disponibil fiind insuficient pentru a asigura calitatea şi accesibilitatea serviciilor prestate, iar în lipsa unor intervenţii neîntârziate ar putea să-l plaseze în incapacitate funcţională. Fiind evident faptul că cheia soluţionării problemelor existente se află în interiorul SSSSP, este imperios necesar a fi elaborate şi implementate, în regim prioritar, politici de sporire a atractivităţii SSSSP pentru medici, declarând resursele umane ca prioritate pentru activitatea eficientă atât a domeniului respectiv, cât şi a sistemului de sănătate integral.*

***Cuvinte-cheie:*** *resurse umane, medici, sănătate publică, servicii de sănătate.*

***Резюме***

***Человеческие ресурсы Службы Государственного надзора за общественным здоровьем Республики Молдова***

*В статье представлены результаты оценки человеческих ресурсов Службы Государственного надзора за общественным здоровьем Республики Молдова, в контексте ее реорганизации начиная с 2009 года. Результаты показали, что развитие человеческих ресурсов в этом секторе в последнее десятилетие имело неблагоприятный характер, характеризующийся непрерывным уменьшением плотности врачей, неравномерным географическим распределением, высоким средним возрастом врачей, преобладанием специалистов пред- и постпенсионного возраста, большой долей врачей без непрерывного профессионального обучения, ориентацией молодых лицензированных врачей главным образом на Кишинэу или на другие виды деятельности т.д. Изложенное является выражением глубокого кризиса человеческих ресурсов Службы Государственного надзора за общественным здоровьем, имеющийся человеческий потенциал будучи недостаточным для обеспечения качества и доступности услуг, что в отсутствии непромедлительных вмешательств может привести к ее функциональной недееспособности. Будучи очевидно, что ключ к решению существующих проблем находится внутри сектора, крайне важно разработать и внедрить, в приоритетном режиме, меры, направленные на повышение привлекательности для врачей, объявив человеческие ресурсы в качестве основного приоритета для эффективной деятельности данного сектора, а также системы здравоохранения в целом.*

***Ключевые слова****: человеческие ресурсы, врачи, общественное здравоохранение, медицинское обслуживание.*

## Introduction

Through adopting the Law concerning the State Supervision Service for Public Health from Republic of Moldova in 2009, there was triggered the organizing process of the preventive medicine system existant at that moment, being created favourable premises for the modernization of this health compartment and the increasing of functional capacities [1].

At the same time, more literary sources mention the human resources as a decisive factor in the implementation of any reforms, being one of the most important components that determine the performance of the services. The human potential namely represents the resource of vital importance for all the organizations, that ensures the development, the competitiveness, the continuity and the durability of the provided services. The human resources are also the key element for a smooth functioning of the health system, that makes possible the individual or collective intervention in the public health sphere. For providing some qualitative and cost-effective health services, the health system needs a performant human potential, motivated, balanced from demographical point of view, open for change and implementation of the modern medical technologies, according to the rigors of the time [2, 3, 4].

The Researces and the analysis made on the chapter of human resources from public health sphere during the last years denote overall unfavorable

tendencies during the last 10 years, such as the continuous reduction of the total number of doctors, the high average age of the doctors, the patchy teritorial and geographical distribution, the intersectoral imbalance, the low transparency of the decisional process, the inecquities of advancement in career, the lack of competition, the low quality and reduced productivity of the provided services, that generate professional dissatisfaction, insufficient motivation, fluctuations 7of the medical personnel on different dimensions and, as a result, reduces the accessibility of the population to the qualitative medical services [5-8].

In this connection, it becomes an axiom the fact that the successfull reorganization of the State Supervision Service for Public Health (SSSPH) from Republic of Moldova and the implementation of modern principles of activity is directly dependent on the available human potential quality, but also on the capacity of the sphere to attract, motivate and mentain the performant workforce. The health Policies promoted at national level during the last decade, target primarily the modernization of the human resources management, set concrete objectives and tasks for ensuring the public health sphere with a professional human potential, capable to offer the population performant health services [9-12].

For reaching these goals there were implemented more mechanisms motivating the doctors for activity in the disadvantaged regions, that unfortunately didn't sell off expected results, the public sphere continuing to deal with difficulties at the human resources chapter, that considerably affects the efficiency, accessibility and the costs of the health services [13, 14].

Despite the awareness of the vital role of human resources in the feasibility processes of reformation and modernization, although the reorganization of SSSPH started in 2009, till present day there were not made studies concerning the evaluation of human resources from this sphere, which would serve as a support for the authorities in the decisional process.

As a result, **the purpose of this study** was the evaluation and analysis of human resources (doctors) in SSSPH, the outlining of the developing tendencies during the last decade and the identification of some eventual solutions to the existant problems.

**Materials and methods**

The research represents an evaluation of the human resources in State Supervision Service for Public Health in Republic of Moldova, based on own researces and official statistical data published by the speciality organs.

The Study includes the period between 2003-2012, being given the fact that, starting with 2003 there was adopted a new administrative-teritorial organization of the country, that involved also the restructuring of principles of statistical reporting, during the same year there was resumed the division for placing in the working field of the young specialists with medical studies, there was definitively regulated the postgraduated training of the doctors, that ensured conditions for truthfull and comparable evaluations on different dimensions.

**Results and discussions**

For the year 2012 in the State Supervision Service for Public Health there were approved totally 787,75 positions of doctors, where activated totally 532 doctors, being occupied totally 641,5 positions (approximately 87%). From the total number of the doctors in SSSPH, which is approximately of 5% from the total number of doctors from the public health sphere (10551), 117 doctors worked in the municipal institutions (Chisinau and Balti), 231 doctors worked in the district institutions (34 district centers of public health) and 184 doctors worked in the republican institutions, including 73 doctors that worked in the scientific field.

During this period the total number of the doctors in SSSPH had a tendency of continuous decrease from the 574 in 2003 to 532 in 2012, the lower level of this sign being registered in 2010 (521). The same tendency was characteristic also for the public health sphere overall, where the total number of the doctors reduced from 10978 in 2003 to 10570 in 2012, although the total number of the doctors from the health system gradually grew, what denotes that the fluctuations of the human resources took place mainly inside. So, in the health system in 2003 worked 12649 doctors, subsequently the number continuously grew to 12914 and only in 2012 the total number of the doctors registered a reduction to 120 doctors (*tab. 1*).

**Table 1**

*The Evolution of the number of doctors during the period 2003-2012*

| Years / Doctors | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |
|---|---|---|---|---|---|---|---|---|---|---|
| Health system | 12649 | 12555 | 12577 | 12674 | 12733 | 12684 | 12783 | 12780 | 12914 | 12794 |
| Public sector of the health system | 10978 | 10753 | 10833 | 10767 | 10646 | 10723 | 10784 | 10619 | 10657 | 10570 |
| SSSPH | 574 | 547 | 532 | 539 | 544 | 530 | 529 | 521 | 549 | 532 |
| Primary Healthcare | 2101 | 2096 | 2066 | 2031 | 2001 | 1947 | 1915 | 1873 | 1852 | 1824 |
| Emergency Medical Service | 407 | 479 | 492 | 502 | 501 | 512 | 520 | 502 | 502 | 497 |

At the same time, a dynamic of obvious unfavourable character was registered in the sphere of primary healthcare, where the total number of

the family doctors during this period reduced to approximately 14%. The only sphere with a positive evolution in this line was that of emergency care, which during the last ten years registered a growth of the total number of doctors with approximately 22%. As follows, the outlined tendencies during the last decade on the human resources chapter proves that in the public health sphere with severe difficulties confronts, especially, the primary healthcare and SSSPH. The reduction of the number of doctors from SSSPH is the expression and the proof, at the same time, of the reduction of attractiveness in this shere of activity, what determined the reorientation of the doctors to other sphere of activity, but also reduced the number of young doctors employed in the corresponding field. So, the rate of the doctors employed in the period of 2003-2012 from the total number of doctors from SSSPH is of approximately 13%, including only approximately 7% of lycensed doctors during the same period, from which the majority of those employed during the last decade are found in the institutions from mun. Chisinau.

Obviously, these tendencies had an unfavorable impact also on the degree of ensuring the population with doctors from the SSSPH, this sign reducing during the last ten years from 1,7 to 1,5 at 10 thousand inhabitants. The Density of doctors from SSSSP reduced not only in the rural area, a phenomenon characteristic to all the categories of doctors, but also in the urban area, so that in Chisinau this sign reduced from 1,4 to 1,1. Despite the growth of the number of doctors in Chisinau, the only category of doctors, whose number reduced during the last decade are those from SSSPH. Although during the same period the density of doctors reduced also in Balti from 2,0 to 1,7, the level of this sign remains the highest from the sphere (*fig. 1A*).

At a district level, during the corresponding period, the density of the doctors from SSSPH mentained to be in the limits of a restricted interval (0,9-1,0), this level being much lower in comparison to the average level per sector (1,5-1,7), what denotes that the district localities are the least attractive for the doctors, and the situation remains unchanged during the last years, despite the efforts of the authorities to attract the lycensed doctors in the unfavourable regions. The density of the doctors from SSSPH differs considerably and in the geographical aspect, so that in the North of the country this sign mentained in the limits of 1,1-1,2, a higher level in comparison to the Center and South regions, where the assurance with doctors, starting with the year 2007, is approximately of 0,8 or twice less than on the sector level (*fig. 1B*). The displayed results denote that during the last decade the density of the doctors

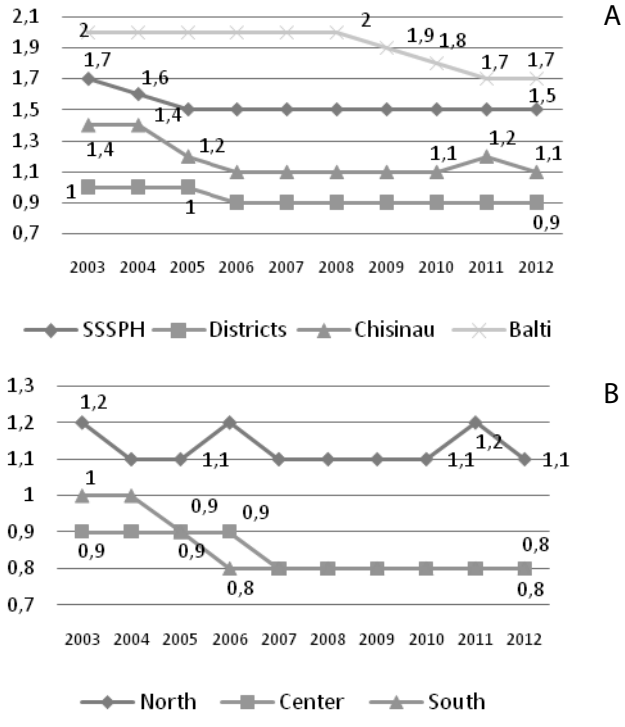


Figure 1. *The Evolution of the density of doctors from SSSPH during the years 2003-2012 on the rural-urban dimension (A) and on the geografic regions (B) (at 10 thousand inhabitants)*

from SSSPH mentained to be at a relative constant level, but absolutely unsatisfactory, with insignificant fluctuations inside the sector. The assurance with doctors is extremely reduced in the districts Leova (0,2), Criuleni (0,3) and Basarabeasca (0,3), but also in the districts Nisporeni (0,5) and Sangerei (0,5), these being the districts with the most serious problems at the human resources chapter, practically being in difficulty the ensuring of the quality of provided services. The highest level of the density of doctors from SSSPH was registered in the district Donduseni (1,8), but also in the districts Ialoveni (1,5), Ocnita (1,4) and Stefan-Voda (1,4) (*fig. 2*).

The results of the analysis show that at a geographical aspect there doesn't exist any well defined tendencies in ensuring the population with doctors of SSSPH, although in general, the north districts register signs relatively more favorable at this chapter.

In mun. Chisinau, whose present population at the beginning of the year 2013 was of appoximately 20% from the total number of the present population in the country, works approximately 40% from the total number of doctors from SSSPH. Taking into consideration also the doctors that activate in departamental institutions located mostly in Chisinau, but also the doctors that activate in Balti, we can affirm that almost half of the total number of doctors from SSSPH are concentrated in the urban environment.

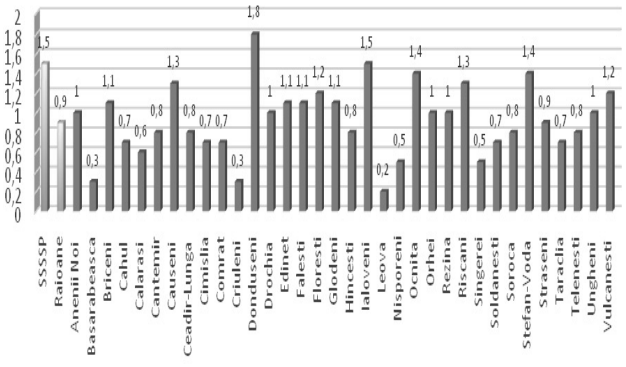


Figure 2. *The Density of doctors from SSSPH in 2012 in the districts of the country (at 10 thousand inhabitants)*

Although this difference on urban-rural dimension can be partly explained by the locating in Chisinau of the National Center of Public Health, which is an institution of republican statute, however, from the point of view of the disposable human potential, the state supervision services of public health are more accessible for the population from the urban localities in comparison to the rural environment.

The division on different categories of age of the doctors from SSSPH denotes that only approximately 12% are under 40 years old, approximately 46% are between 40 and 60 years old and approximately 42% are over 60 years old (*fig. 3A*). The absolute majority of the doctors (approximately 60%) are between 50 and 70 years old, and approximately 8% are over 70, inclusiding 9 doctors of over 75 years old. The division on age categories of the doctors at a district level coincide, in general lines, with that on a national level, but in Chisinau there were outlined some peculiarities, as the rate of the doctors with the age up to 40 years old (17%) being higher and the rate of those over 60 years old being lower (36%), a proof that during the last decade, the majority of the young doctors preffered to get emloyed in Chisinau. The average age of the doctors from SSSPH at a national level is of approximately 53 years old, in Chisinau this sign being equal to approximately 52 years old and at a district level – approximately 55 years old.

These data restore an unfavorable demographical picture of the human resources from SSSPH, being given the fact that there prevails the age of the doctors over 50 years old, and the rate of those of higher age is clear superior to those of young age. So, only approximately a doctor from ten is under 40 years old, and almost every the third doctor is over 60 years old. This phenomenon with an unsatisfactory character, which although coincide with the tendencies of the population at a national level of getting old, can generate in perspective severe difficulties for ensuring the continuity and the balance between different age generations.

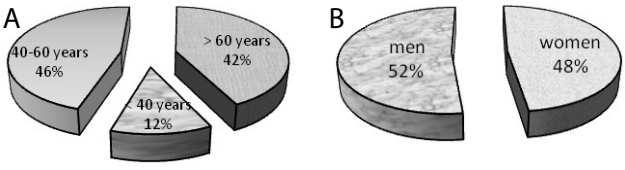


Figure 3. *The ratio according to age (A) and sex (B) of the doctors from SSSPH*

Approximately 48% from the doctors from SSSPH are women and approximately 52% are men, that corresponds to the repartition on sexes of the population at a national level (48% barbati si 52% femei), but considerably differs from the repartition of the doctors on sexes at public health sphere level, where approximately 42% are men and approximately 58% are women (*fig. 3B*). There exist some differences of this sign on urban-rural dimension, so that in Chisinau there is seen a prevalence of the doctors of female sex (54%), and in the districts prevale the doctors of male sex (55%). Despite these differences, the repartition according to the gender of the doctors in SSSPH is balanced, what confirms the fair access to the training in the field, to the exercising of the corresponding profession and the developing of the career, indifferent of the sex.

From the total number of the doctors from SSSPH almost half are hygienists (48%), and a half are epidemiologists (29%) and microbiologists (23%), that corresponds to the ratio of the approved positions for these categories of specialists at the sector level (*fig. 4A*).

The analysis of the evolution in dynamic of the density of doctors in SSSPH according to the qualifications denotes that at a district level this sign registered insignificant fluctuations in case of the hygienist doctors (0,7-0,8) and microbiologists doctors (0,3-0,4), the density of the epidemiologists doctors remaining constant during the last decade (0,4). This constancy of the indicators cannot be considered satisfactory, being given the considerable number of positions remaining vacant during the last decade (*tab. 2*).

So, from the total number of 233,25 positions of epidemiologists doctors approved for the year 2012 there were occupied only 177 positions by 143 doctors, what supposes that approximately ¼ from the approved positions remained vacant during the year. The same picture was registered also in the case of the hygienists doctors, for whom were totally approved 398,75 positions, being occupied only 318,75 by 260 persons, so that approximately 1/5 from the positions remained vacant. Only the positions of the microbiologists doctors were completed almost integral, from 150,75 approved being occupied 142 by 124 doctors, what supposes that only appoximately 6% of the positions remained vacant during the year. These data denote that the

human resources existant in SSSPH are disponsable to cover in reality only approximately 2/3 from the total number of the approved positions, respectively every the third position of doctor was vacant, although a considerable part of the positions were occupied through cumulation.

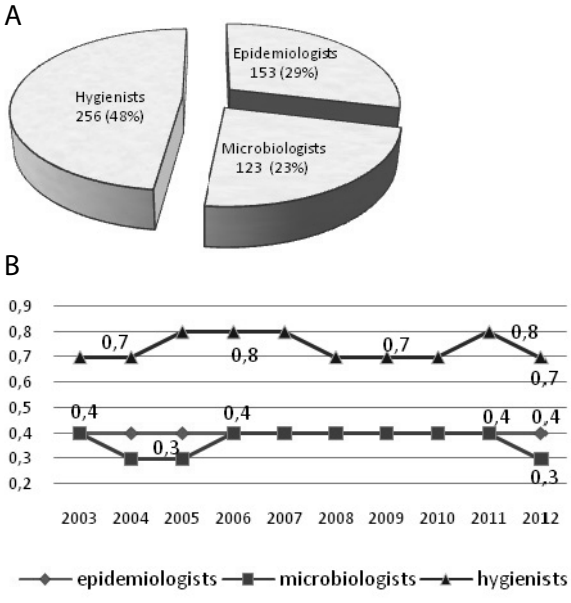


Figure 4. *The Repartition on qualifications of the doctors from SSSPH (A) and the evolution in dynamic of the density of these (B) (at 10 thousand population)*

**Table 2**

*The repartition of the approved and occupied positions by the doctors (2012)*

| | *Approved positions* | *Occupied positions* | *Doctors* |
|---|---|---|---|
| Epidemiologists, isinfectionists, parasitologists | 238,25 | 180,75 | 148 |
| • epidemiologists | 233,25 | 177 | 143 |
| • disinfectionists | 1,5 | 1,5 | 1 |
| • parasitologists | 3,5 | 2,25 | 4 |
| Microbiologists, virologists | 150,75 | 142 | 124 |
| • microbiologist | 139 | 132 | 116 |
| • virologists | 11,75 | 10 | 8 |
| Hygienists | 398,75 | 318,75 | 260 |
| • general hygiene | 113,25 | 74 | 68 |
| • children and adolescents hygiene | 45,25 | 38,75 | 33 |
| • food hygiene | 55,75 | 48,75 | 42 |
| • occupational hygiene | 53,25 | 48,75 | 42 |
| • radiation hygiene | 12,75 | 10 | 6 |
| • environmental and human habitat hygien | 51,75 | 49,75 | 41 |
| • health education | 66,75 | 48,75 | 28 |
| TOTAL | 787,75 | 641,5 | 532 |

Approximately 69% from the total number of doctors of the SSSPH followed continuous professional instruction during the last five years, what supposes that approximately every the third doctor remained outside of this process. The degree of involving into continuous professional instruction of the doctors from SSSPH is more unsatisfactory, in comparison to other categories of doctors, and this phenomenon can be the proof of some difficulties in ensuring the quality of the provided services.

According to the normative regulations in force, the level of professional qualification of the doctors is periodically evaluated in the specialized commitees of the Ministry of Health. So, from the total number of the doctors of the SSSPH, approximately 53% have the superior category of professional qualification, approximately 10% have the second category, 7% have the third category, and approximately 30% do not have any category of professional qualification. These data denote that approximately every the third doctor do not have a category of professional qualification, respectively was not supposed to an evaluation in the specialized commitees and cannot be confirmed the correspondence of the qualification level to the responsibilities of function. Although this survey did not evaluate the correlations between the level of professional qualification and the age, however hypotetically we can suppose that the majority of the doctors which did not confirm the level of professional qualification in the specialized commitees are of elder age and refused the participating to the process of evaluation of the knowledges and practical abilities, a phenomenon that in conditions of a high deficiency of doctors is hard to deal with.

In the period between 2003-2012 there were totally lycensed 172 doctors in the corresponding domain, including 54 epidemiologists doctors, 70 hygienists doctors and 48 microbiologists doctors, and in case of employing of these according to the qualification, SSSPH would have been fully ensured with the necessary human resources (*tab. 3*).

At the same time, at the beginning of the year 2013, in the public sphere of health there activated only approximately 20% from the total number of doctors lycensed in the corresponding period, what supposes that only 1/5 from the lycensed doctors accepted to continue the professional activity according to the qualification in the SSSPH, and 4/3 directed to other spheres of activity. These data proves that the professional activity of the young doctors in the SSSPH is insufficient attractive and does not offer motivational opportunities for attracting and mentaining of these in the sphere, there existing different other options more advantageous for employing either in the health sphere or in other spheres of the national economy. Neigher after the year 2007, when there were implemented particular economical incentives for the young specialists, the situation did not change, and this phenomenon proves the seriosity of this problem not only in the SSSPH, but also in the wholly public sphere of health.

**Table 3**

*The number of doctors from the field of the SSSPH lycensed in the period between 2003-2012*

| Doctors / Years | Epidemiologists | Hygienists | Microbiologists | Total |
|---|---|---|---|---|
| 2003 | - | 5 | 6 | 11 |
| 2004 | 8 | 8 | - | 16 |
| 2005 | 7 | 15 | 7 | 29 |
| 2006 | 6 | 17 | 8 | 31 |
| 2007 | 11 | 4 | 4 | 19 |
| 2008 | 5 | 4 | 7 | 16 |
| 2009 | 1 | 2 | 1 | 4 |
| 2010 | - | 5 | 1 | 6 |
| 2011 | 16 | 10 | 14 | 40 |
| 2012 | - | - | - | - |
| Total | 54 | 70 | 48 | 172 |

During the last decade, the process of professional forming of the doctors in the corresponding sphere was in a continuous process of identification of some rezonable solutions for the national system of health, neigher unfinished till present day. In the context of adjusting the medical training to the rigors of the european community, there was optimized the process of forming the doctors from the preventive medicine sphere by unifing the university training in the General Medicine speciality, with a postgraduate specialization via rezidency in the corresponding domain. But subsequently, in the majority of the degree of ensuring the SSSPH with doctors, it was returned to a separate university training of the doctors for the corresponding sphere, and the impact and opportunity of this returning follows to be evaluated in the future, when the doctors from the first promotions would be lycensed.

So, in 2004 there were made changes in the „Nomenclature of the specialities for personnel training in the higher education institutions", being included the speciality of „Public Health", subsequently also included in the „Nomenclature of the spheres of professional training and of the specialities for personnel training in educational institutions", approved in 2005, which is also in force till present. As a result of these legislative changes, starting with the year 2004, in the SUMF „Nicolae Testemitanu" started the admission to the speciality „Public Health", annually being offered from state budget account a particular number of scholarships for university training in this speciality. Concomitant with the university training in the speciality „Public Health" there were offered state scholarships for the postgraduate training via rezidency at the specialities Epidemiology, Hygiene and Microbiology for the graduates of General Medicine faculty (*tab. 4*).

Despite all the efforts of the authorities to diversify and optimize the process of professional training of the doctors in SSSPH, the evaluation of the degree of getting involved in the working field of the doctors lycensed in the corresponding domain till present denotes that the majority does not continue the professional activity according to the qualification, and the corresponding sphere continues to deal with hard difficulties at the human resources chapter.

**Table 4**

*The number of scholarships for the university training in speciality „Public Health"*

| Years | The number of scholarships offered by the state for university training of the doctors in the speciality „Public Health" | The number of scholarships offered by the state for postgraduating training via rezidency in the specialities Epidemiology, Hygiene and Microbiology |
|---|---|---|
| 2003 | - | 28 |
| 2004 | 40 | 35 |
| 2005 | 40 | 21 |
| 2006 | 60 | 21 |
| 2007 | 60 | 21 |
| 2008 | 85 | 21 |
| 2009 | 50 | 24 |
| 2010 | 50 | 35 |
| 2011 | 50 | 30 |
| 2012 | 50 | 52 |
| Total | 485 | 288 |

So, it is obvious that the key to solving the problems of the SSSPH at the chapter human resources is inside the sphere and is preponderant tight by the growth of attractiveness for activity and evolution in career, and the iar optimization of the professional training of the doctors can serve only as a support in solving these problems.

Moreover, the divergencies of conception and interpretation of the public health on different dimensions, the difference of visions on the process of university and postgraduating training of the doctors in this sphere, and also other different uncertainties, continues to generate confusions and difficulties in the identification of some feasible solutions at this chapter.

In conditions of economical difficulties and financial constraints, which would persist continuously, it follows to be identified inside the SSSPH pertinent solutions for the continuous development of the quality and accessibility to the health services. In this context, a primordial subject that is recommended to authorities to be examined is the optimization of using the human resources through efficient economical mechanisms as the diversification of the forms of providing the corresponding services, eventually, by implication of other categories of specialists with lower medical qualifications, and also with not medical qualifications.

Therefore, the low density of the doctors from this sphere of health, the lack of some positive tendencies and even the continuous aggravation of the

situation at this chapter during the last decade, the older age of the majority of doctors, the low involvement in the continuous professional training, the refusal of the young lycensed doctors to accept to continue the activity according to the qualification, but also another factors denote about a picture of the human resources from SSSPH characterized as an unstable and unsatisfactory one, which in the absence of some decisive and prompt interventions, can degenerate into an extremely grave one on a medium and long term.

At the same time, the differences existant at the human resources chapter from the corresponding service in the european countries in relation to that from republic of Moldova, do not allow the execution of some relevant comparative evaluations, which can reflect the real state of the situation at this compartment.

**Conclusions**

1. The evolution of the human resources from the SSSPH during the last decade had an unfavorable character, and the disposable human potential continuously remains insufficient to ensure the quality and accessibility of the provided services at a national level.

2. The continuous diminution of the density number of doctors, the high average age of the doctors, the predominance of doctors of pre and post retirement age, the high rate of the doctors without continuous professional training during the last five years, not being evaluated the level of professional qualification of these, the preponderant orientation of the young lycensed doctors to Chisinau or to other spheres of activity, despite the considerable investments during the studies and so on, are the expression of a deep crisis of the SSSPH at the human resources chapter and of the extremely low attractiveness of this sphere, which in absence of some radical prompt interventions, can place it into a functional incapacity.

3. The evolution of the indicators of human resources denotes that, a result of the reorganization of the SSSPH, up to nowadays it didn't succeed to create favorable conditions for improving the professional attractiveness, the development of the human resources, the attraction and maintenance of the young doctors, the evolution in career and professional satisfaction, what would contribute to the growth of motivation and the consolidation of the disposable human potential.

4. It is absolutely necessary to be elaboratев and implemented, first of all, policies of improving the attractiveness of the SSSPH for the doctors, declaring the human resources as a primary priority for an efficient activity either of the corresponding sphere or of the wholly health system.

5. In conditions of continuous reduction of the number of doctors and the aging tendencies of these, of the financial persistence constraints, the unfavorable social and demographical evolution follows to be identified inside the SSSPH pertinent solutions for the efficient management of the human resources through efficient economical mechanisms, including through diversifing and stratification of the process of providing the health services, the training of other categories of specialists with lower medical qualifications, and also not medical qualifications, that would enlarge the spectrum of the involved specialists and would increase the possibilities of ensuring the profile institutions with necessary working force.

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# ALGORITMUL DE EVALUARE A RISCULUI EŞECULUI TRATAMENTULUI TUBERCULOZEI PULMONARE

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***Summary***

***Algorythm of antituberculosis treatment failure risk evaluation***

*R Moldova reports the highest incidence of tuberculosis (114,3/100.000) in European Regions, the lowest treatment succes rate (52,3%) and the highest treatment failure rate (2009-6,2%, 2010-19,6%, 2011-3,6%). Using, a study group of 201 new pulmonary TB cases with treatment failure and a control group of 105 new pulmonary TB cases cured, were evaluated risk factors for antituberculosis treatment failure and was performed an algorithm of risk estimation of treatment failure.*

***Keywords:*** *tuberculosis, antituberculosis treatment failure, risk factors.*

***Резюме***

***Алгоритм оценки риска неудачного лечения туберкулеза легких***

*Р. Молдова подтверждает самый высокий уровень заболеваемости туберкулезом (114,3/100.000), самый низкий уровень эффективности результата лечения (52,3%) и самый высокий уровень неудачного лечения туберкулеза легких (2009 – 6,2%, 2010 – 19,6%, 2011 – 3,6%) в Европейском Регионе. Были изучены причины неудачного лечения туберкулеза легких как факторов риска у основной группы, составленной из 201 ново-выявленных больных с неудачным лечением и соответственно у контрольной группы, составленной из 105 ново-выявленных больных с удачным лечение. Был составлен алгоритм оценки риска неудачного лечения для использования пневмофтизиатрами.*

***Ключевые слова****: туберкулез, неудачное лечение туберкулеза, факторы риска.*

## Introducere

Tuberculoza reprezintă cea mai gravă problemă de sănătăte publică, afectând populaţia la vârsta de maximă activitate economică. Obiectivele adoptate la cea de-a 44-a Adunare Mondială privind Sănătatea din 1991 au fost depistarea a 70% de cazuri noi de tuberculoză prin microscopia sputei şi atingerea ratei succesului terapeutic de 85% în cazurile noi. În Regiunea Europeană, rata medie a succesului terapeutic înregistrat în 2009 a fost de 66%, cea mai mica s-a înregistrat în Moldova (<52,3%) [3, 9, 10]. De asemenea, rata eşecului în R. Moldova a fost raportată la valori peste media europeană de 5%: în 2006 – 10,9%, 2007 – 9,2%, 2008 – 7,4%, 2009 – 6,2% şi în 2010 – 19,6% [1].

Cauzele eşecului terapeutic includ mai mulţi factori, clasificaţi în: 1. factori biologici; 2. factori imunogenetici; 3. factori clinici şi terapeutici; 5. factori social-epidemiologici; 6. factori administrativi.

*Factorii biologici* corelaţi cu eşecul, ce ţin de macroorganism, sunt: vârsta cu risc ftiziogen maxim (18-45 ani), sexul masculin, sarcina/lăuzia, comorbidităţile [8]. Factorii biologici ce ţin de microorganism: populaţia micobacteriană rezistentă la preparatele antituberculoase, anumite spoligotipuri de micobacterii (*Beijing, Ural*) [2].

*Factorii imunogenetici* corelaţi cu eşecul sunt comorbidităţile, ce provoacă diminuarea severă a imunităţii mediate celular (infecţia HIV, neoplaziile sistemului limfo-ganglionar, tratamentul cu blocanti TNF-α, diabetul zaharat) şi a imunităţii umorale [8]. Anumite haplotipuri precum: *HLA-DQB1*0502*, *HLA-DR2* induc un risc crescut pentru eşec.

*Factorii clinici* corelaţi cu eşecul ţin de particularităţile clinico-radiologice şi severitatea tuberculozei, dar şi de complicaţiile asociate. Formele severe de tuberculoză (TB diseminată, TB fibrocavitară), acompaniate de complicaţii cu caracter de urgenţă (hemoptizii, pleurezie, pneumotorax, hidropneumotorax), au risc înalt de eşec terapeutic.

*Factorii terapeutici* corelaţi cu eşecul sunt: asocierea redusă şi neregularitatea administrării preparatelor antituberculoase, individualizarea tratamentului standard, biovalabilitatea redusă a principiilor active (datorată co-morbidităţilor şi calităţii suboptimale), calitatea negarantată a preparatelor [2, 11].

*Factorii sociali* şi *epidemiologici* corelaţi cu eşecul sunt: statutul social-economic jos, statutul educaţional incomplet, apartenenţa la grupuri sociale/etnice/religioase extreme, consumul cronic/abuziv de alcool, utilizarea drogurilor, grupurile social-epidemiologice periclitante (migranţii, deţinuţii, persoanele fără loc de trai, bolnavii din focare epidemice) [5].

*Factorii administrativi* ce influenţează rata eşecului includ toate nivelele de management al Programului Naţional de Control al Tuberculozei: asigurarea nesatisfăcătoare/cu întreruperi, reţinerea şi întârzierea în distribuirea medicamentelor antituberculoase, procurarea preparatelor fără garanţia calităţii, transportul şi păstrarea lor defectuoasă, ceea ce conferă biovalabilitate redusă, utilizarea preparatelor antituberculoase (precum rifampicina, streptomicina, fluoroquinolonele) în afecţiuni nespecifice [7].